

AMENDMENTS TO THE CLAIMS

1-21 (Canceled).

22 (Currently Amended) ~~A plating~~An electroplating apparatus for plating a workpiece having a surface to be plated using a plating solution, the ~~plating-electroplating~~ apparatus comprising:

a plating tank for holding the plating solution;

an anode arranged in the plating tank so as to be immersed in the plating solution held in the plating tank;

a holder for holding the workpiece and bringing the surface of the workpiece into contact with the plating solution held in the plating tank; and

a fixing plate having an opening therein, the fixing plate being arranged so as to divide an interior of the plating tank into an anode compartment accommodating the anode and a workpiece compartment accommodating the workpiece held by the holder; and

a ring-shaped nozzle pipe fixed to the fixing plate in the plating tank so as to be immersed in the plating solution held in the plating tank, the nozzle pipe being shaped to extend along an outer profile of the workpiece, and having a plurality of injection nozzles for injecting the plating solution toward the surface of the workpiece held by the holder to supply the plating solution into the plating tank.

23 (Currently Amended) ~~A plating~~An electroplating apparatus according to claim 22,

wherein the plating solution is injected in streams from the injection nozzles, and

wherein the streams of the plating solution injected from the injection nozzles intersect each other on or in front of a substantially central area of the surface of the workpiece held by the holder.

24 (Cancelled).

25 (Currently Amended) ~~A plating~~An electroplating apparatus according to claim 24,

further comprising a plating solution injection nozzle for injecting the plating solution toward the anode to supply the plating solution into the plating tank.

Claims 26-29 (cancelled).

30 (Currently Amended) ~~A plating~~An electroplating apparatus according to claim 22, wherein the nozzle pipe is movable relative to the workpiece held by the holder.

31 (Currently Amended) ~~A plating~~An electroplating apparatus according to claim 22, wherein the nozzle pipe and/or the injection nozzles are made of an electrically insulating material.

32 (Currently Amended) A plating apparatus for plating a workpiece having a surface to be plated using a plating solution, the plating apparatus comprising:

a plating tank for holding a plating solution; and

a stirring mechanism having a plurality of solid stirring vane-vanes for immersing in the plating solution in the plating tank and disposing in a position, the stirring vanes being arranged at respective positions facing the surface of the workpiece, each of the stirring vane-vanes being reciprocally movable parallel to the surface of the workpiece within a region different from regions of the other stirring vanes to stir the plating solution within the region different from regions of the other stirring vanes, and each of the stirring vanes having irregularities on at least one side thereof for generating swirls in the plating solution when the stirring vane is reciprocally moved, the irregularities comprising a succession of triangular or rectangular saw-tooth irregularities.

33 (Currently Amended) A plating apparatus according to claim 32, wherein a side of the at least one side of each of the stirring vane-vanes having the irregularities provided thereon faces the surface of the workpiece.

34 (Cancelled).

35 (Currently Amended) A plating apparatus for plating a workpiece having a surface to be plated using a plating solution, the plating apparatus comprising:

a plating tank for holding a plating solution; and
a stirring mechanism having a plurality of stirring vanes having stirring surfaces for immersing in the plating solution in the plating tank and for stirring the plating solution,
wherein the plurality of stirring vanes extend vertically within the plating tank and are actuatable by respective independent drive mechanisms each having an independent drive source, the plurality of stirring vanes having respective edgestip ends which are aligned with each other to keep stirring surfaces of the plurality of stirring vanes in alignment with each othersuch that distances between the stirring surfaces of the stirring vanes and the surface of the substrate are equal.

36 (Previously Presented) A plating apparatus according to claim 35, wherein stirring vanes of the plurality of stirring vanes are different in shape from each other.

37 (Previously Presented) A plating apparatus according to claim 35, wherein the plurality of stirring vanes are reciprocally movable in directions parallel to the surface of the workpiece.

38 (Previously Presented) A plating apparatus for plating a workpiece having a surface to be plated using a plating solution, the plating apparatus comprising:

a plating tank for holding a plating solution; and
a stirring mechanism having a stirring vane for immersing in the plating solution in the plating tank and disposing in a position facing the surface of the workpiece, the stirring vane being mounted on a rotational shaft and reciprocally movable parallel to the surface of the workpiece to stir the plating solution,

wherein the stirring vane is oriented such that a plane of the stirring vane forms an angle with respect to a plane perpendicular to the surface of the workpiece , the stirring mechanism being operable to vary the angle of the plane of the stirring vane with respect to the plane perpendicular to the surface of the workpiece as the stirring vane reciprocally moves by angular movement of the rotational shaft about the longitudinal axis of the rotational shaft.

39 (Previously Presented) A plating apparatus according to claim 38, wherein the stirring mechanism has a plurality of stirring vanes.

40 (Currently Amended) ~~A plating~~An electroplating apparatus according to claim 22, wherein the injection nozzles of the nozzle pipe ~~being~~are spaced apart along an annular axis of the nozzle pipe.

41 (New) An electroplating apparatus according to claim 22, further comprising a regulation plate having a central hole, the regulation plate being arranged in the plating tank between the ring-shaped nozzle pipe and the workpiece held by the holder.

42 (New) An electroplating apparatus according to claim 22, further comprising a stirring mechanism in the plating tank between the ring-shaped nozzle pipe and the substrate held by the holder, the stirring mechanism having a stirring vane configured to move reciprocally parallel to the surface of the substrate for stirring the plating solution held in the plating tank.

43 (New) An electroplating apparatus according to claim 22, wherein the opening of the fixing plate has a size no larger than an inside diameter of the ring-shaped nozzle pipe.